AMENDMENTS TO THE CLAIMS:

Please amend claims 1 and 10 as indicated by the following. This listing of claims will replace all prior versions and listings of claims in the above-referenced application.

Listing of Claims:

1. (Currently Amended) A method of classifying a portion of an electrical signal propagating through a conductor, comprising:

digitizing the electrical signal to provide a digitized signal;

providing a plurality of stored digitized signals, wherein each stored digitized signal corresponds to a digitized electrical signal for one of a number of different possible types of faults ~~a type of fault~~ for the conductor;

comparing the digitized signal to each of the stored digitized signals to determine a score therefore;

if the score is less than a predetermined value for a particular one of the stored digitized signals, classifying the portion of the electrical signal as a fault corresponding to the particular one of the stored digitized signals; and

if none of the scores are less than the predetermined value, classifying the portion of the electrical signal as having no fault.

2. (Original) The method of Claim 1, further comprising:

converting the digitized electrical signal to reflection coefficients.

3. (Original) The method of Claim 2, wherein converting the digitized electrical signal includes dividing the values thereof by an input signal magnitude.

4. (Original) The method of Claim 3, further comprising:

compensating the signal to remove unwanted reflective components caused by inverse scattering.

5. (Original) The method of Claim 4, further comprising:

after compensating the signal to remove unwanted reflection components, performing attenuation compensation on the signal.

6. (Original) The method of Claim 5, wherein attenuation compensation is a function of frequency and an amount of time the signal has traveled in the conductor.

7. (Original) The method of Claim 5, wherein attenuation compensation is a function of frequency.

8. (Original) The method of Claim 1, wherein determining a score for a particular one of the stored digitized signals includes determining differences between the digitized signal and the particular one of the stored digitized signals at each point and summing the squares thereof.

9. (Original) The method of Claim 8, further comprising:

adjusting the score based on one of :the variance of the particular one of the stored digitized signals and the covariance of the particular one of the stored digitized signals.

10. (Currently Amended) A computer program product that classifies a portion of an electrical signal propagating through a conductor, comprising:

executable code that digitizes the electrical signal to provide a digitized signal;

executable code that compares the digitized signal to each of a plurality of stored digitized signals that corresponds to a digitized electrical signal for one of a number of different possible types of faults ~~a type of fault~~ for the conductor to determine a score therefore;

executable code that classifies the portion of the electrical signal as a fault corresponding to the particular one of the stored digitized signals if the score is less than a predetermined value for a particular one of the stored digitized signals; and

executable code that classifies the portion of the electrical signal as having no fault if none of the scores are less than the predetermined value.

11. (Original) The computer program product of Claim 10, further comprising:

a memory that contains the plurality of stored digitized signals that correspond to types of faults for the conductor.

12. (Original) The computer program product of Claim 10, further comprising:

executable code that converts the digitized electrical signal to reflection coefficients.

13. (Original) The computer program product of Claim 12, wherein executable code that converts the digitized electrical signal includes executable code that divides the values thereof by an input signal magnitude.

14. (Original) The computer program product of Claim 13, further comprising:

executable code that compensates the signal to remove unwanted reflective components caused by inverse scattering.

15. (Original) The computer program product of Claim 14, further comprising:

executable code that performs attenuation compensation on the signal after compensating the signal to remove unwanted reflection components.

16. (Original) The computer program product of Claim 15, wherein attenuation compensation is a function of frequency and an amount of time the signal has traveled in the conductor.

17. (Original) The computer program product of Claim 15, wherein attenuation compensation is a function of frequency.

18. (Original) The computer program product of Claim 10, executable code that determines a score for a particular one of the stored digitized signals includes executable code that determines differences between the digitized signal and the particular one of the stored digitized signals at each point and summing the squares thereof.

19. (Original) The computer program product of Claim 18, further comprising:

executable code that adjusts the score based on one of :the variance of the particular one of the stored digitized signals and the covariance of the particular one of the stored digitized signals.